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Ameliorating liver fibrosis using the secretome released from miR-122 transfected adipose-derived stem cells in an animal model

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Introduction : Recently, the exclusive use of mesenchymal stem cell (MSC)-secreted molecules, named as the secretome, rather than cells has been evaluated for overcoming the limitations of cell-based therapy while maintaining its advantages. In this study, we were intended to determine the therapeutic potential of secretome released from miR-122 transfected ASCs.

Methods : We collected the secretory materials released from ASCs that had been transfected with antifibrotic miR-122 (MCM), and compared their antifibrotic effects with naïve secretome (CM). MCM and CM were intravenously administered to the mouse model of thioacetamide-induced liver fibrosis, and their therapeutic potentials were compared.

Results : MCM infusion provided higher therapeutic potential in terms of (a) reducing the collagen content in the liver, (b) inhibiting the proinflammatory cytokines, and (c) reducing the abnormally elevated liver enzymes than did the infusion of naïve secretome. The proteomic analysis of MCM also indicated that the contents of antifibrotic proteins were significantly elevated than naïve secretome.

Conclusions : We thus could conclude that the secretome released from miR-122 transfected ASCs has higher antifibrotic and anti-inflammatory properties than naïve secretome. Because miR-122 transfection into ASCs provides a specific way of potentiating antifibrotic properties of ASC-secreteome, it could be considered as an upgraded way of reinforcing the secretome effectiveness.

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